



MICRO-FLAT
DATUMS PVT. LTD.

... in pursuit of perfection

Dear Customer,

Ever since we presented our first one page leaflet in 1978 our catalogue size went on increasing as we were adding products in wide ranges to meet the ever increasing needs of Engineering Industry.

We are fortunate to have the on going patronage of our valued customers and we could live up to their expectations and faith reposed in our endeavours.

In this seventh submission of our catalogue, you will find exceptionally wide range of products which meets practically most of the critical requirements in Precision Engineering Industry. Our logo is familiar the world over which signifies what we promise - "The Pursuit of Perfection".

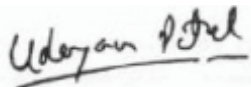
We believe, our strength lies in the key factors which our customers value so highly.

- » The Quality / price ratio of our products which shows our concern for customers who work continuously under economic constraints.
- » Our contribution for an increase in Productivity and Reliability.
- » Our customer driven approach to meet any special requirements and urgent deadlines.

We have been backed by the experience and commitments of three generation in this field having the winning combination of Traditional skill, Team Spirit, Advance Technology in manufacturing and finally the state of art Quality Control Equipment and Calibration facilities - in perfect harmony and all under one roof admeasuring 10000 sq. mts.

We trust our being together will add more ZEROS between decimal point and numeral to decimate the tolerance, thereby bringing our world closer.

For MICRO-FLAT DATUMS PVT. LTD.



MANAGING DIRECTOR

MICROFLAT GRANITE SURFACE PLATES

Granite Surface Plates are used for precision gauging, inspection, layout and marking purposes. They are preferred by Precision Tool Rooms, Engineering Industries and Research Laboratories because of their following outstanding advantages:

No rust, no corrosion, relatively warp-free, no compensation hump when nicked, longer wear, smoother action, greater precision, non-magnetic, less care after commissioning, lower co-efficient of thermal expansion and non-glaring surface.



SALIENT FEATURES:

- » Made from close grained Granite having uniform colour & texture having hardness between 5.6 to 7 on Moh's scale, sound and free from flaws fissures and large inclusions of softer minerals.
- » Made generally as per IS-7327-2003. Also available on request conforming to DIN-876-1972, BS-817-1988, JIS-B-7513 and US Federal specification GGG-P-463-C.
- » Metallic threaded inserts, Metallic T-slots, Plates with two or four ledges also can be supplied against specific request at extra cost.
- » Rexine cover provided for top working surface with each Surface Plate.
- » MS Fabricated Stand / Cupboard type / Cast Iron individual Column type Stand/Granite special Stand with Vibration Isolation Plates with leveling screws are available on request at extra cost.

STANDARD SIZES AND TOLERANCE OF FLATNESS				
Sizes in mm	Flatness tolerances of various Grades (microns)			
(L x B)	Grade-0	Grade-1	Grade-2	Grade-3
160 x 100	3.0	6.0	12.0	25.0
250 x 160	3.5	7.0	14.0	27.0
250 x 250	3.5	7.0	15.0	30.0
400 x 250	4.0	8.0	16.0	32.0
400 x 400	4.5	9.0	17.0	34.0
630 x 400	5.0	10.0	20.0	39.0
630 x 630	5.0	10.0	21.0	42.0
1000 x 630	6.0	12.0	24.0	49.0
1000 x 1000	7.0	14.0	28.0	56.0
1600 x 1000	8.0	16.0	33.0	66.0
2000 x 1000	10.0	19.0	38.0	76.0
2500 x 1600	11.5	23.0	46.0	92.0

NON-STANDARD AND LARGES SIZES		
500 x 500	600 x 450	600 x 600
750 x 500	750 x 600	800 x 600
900 x 600	1000 x 500	1000 x 600
1000 x 750	1200 x 800	1200 x 900
1200 x 1200	1500 x 750	1500 x 1000
1500 x 1200	1500 x 1500	1800 x 1200
2000 x 1250	2000 x 1500	2000 x 2000
2400 x 1200	2500 x 1000	2500 x 1500
2500 x 1600	2500 x 2000	3000 x 1000
3000 x 1250	3000 x 1500	3000 x 2000
3000 x 2500	3000 x 3000	4000 x 1000
4000 x 1500	4000 x 2000	4000 x 2500
4000 x 3000	5000 x 1000	5000 x 2000
6000 x 1000	6000 x 1500	6000 x 2000

» Other sizes on request.

» PERMITTED DEVIATION OF FLATNESS TOLERANCE OF SURFACE PLATES AS PER VARIOUS STANDARDS

IS-2285-2003 / IS-7327-2003

$t = C_1 I + C_2$

where,

t is the tolerance on deviation from overall flatness in μm
I is the nominal length of the diagonal of the plate, rounded up to the nearest 100 mm.

C₁ & C₂ are constants, Values are given in Table 1

Table 1

Grade of Surface Plate	C ₁	C ₂
0	0.003	2.5
1	0.006	5.0
2	0.012	10.0
3	0.024	20.0

BS-817-1988

Grade-0: $t = 0.0025 d + 2.5$

Grade-1: $t = (0.0025 d + 2.5) \times 2$

Grade-2: $t = (0.0025 d + 2.5) \times 4$

d is the nominal length of the diagonal of the Surface Plate (mm).

DIN-876-1972

Grade-00: $2 + a/500$

Grade-0: $4 + a/250$

Grade-1: $10 + a/100$

where 'a' is the length of longest side of the Surface Plate

GGG-P-463C

For Grade-AA, Surface Plates are obtained from the following formula:

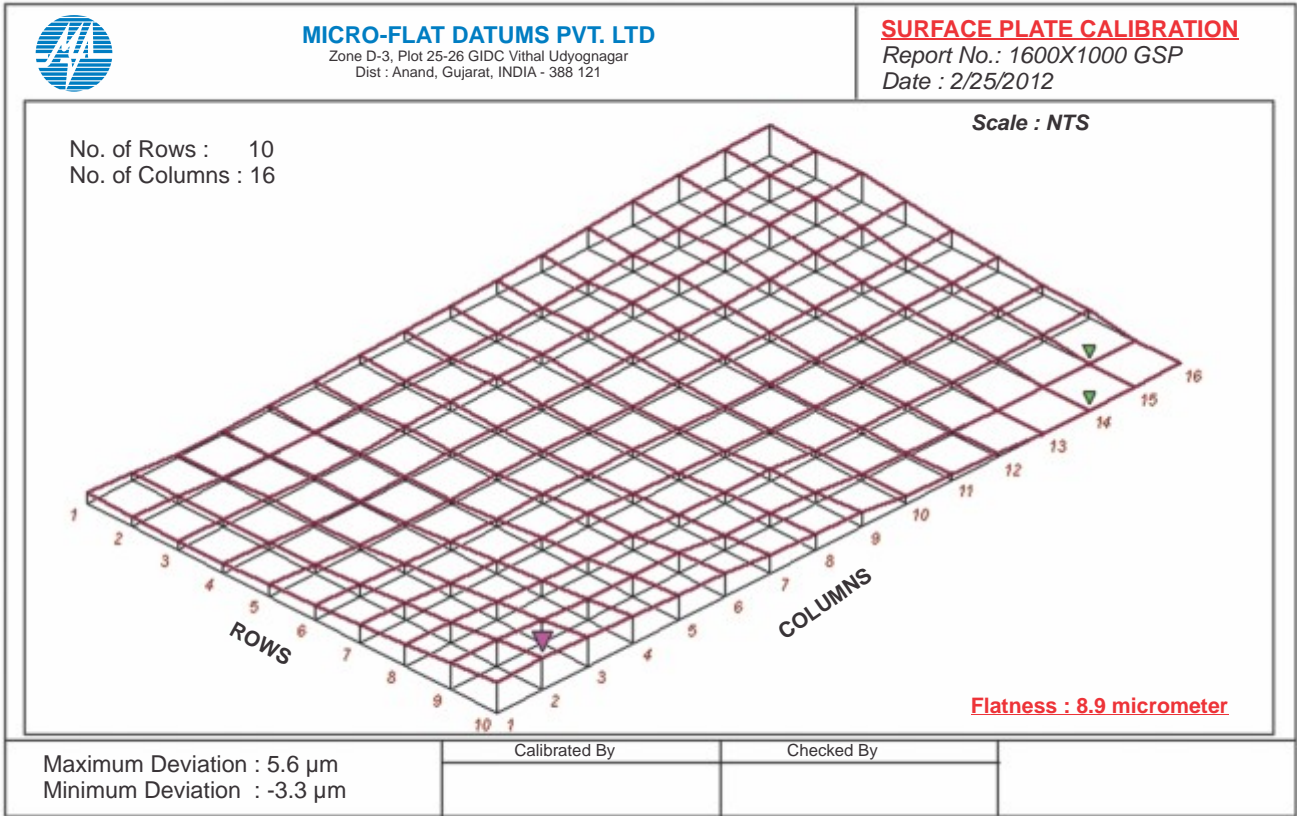
Total flatness tolerance in microinches = $40 + D^2/25$

D = diagonal or diameter of the Surface Plate in inches.

The calculated flatness tolerance for Grade AA is rounded off to the nearest 25 microinches.

The tolerance on the A & B Grade Surface Plates are 2 and 4 times respectively to those for Grade-AA.

Surface Plates are provided with NABL calibration certificate traceable to National standards from our in-house calibration Laboratory including a contour plot of flatness deviation as shown below.



MICROFLAT WATER LESS GRANITE SURFACE CLEANER

Special product for cleaning and maintaining granite surfaces. Keeping your granite surface products clean and in the best condition can help ensure accurate readings. It's special formula avoids friction and wear. It assures better sliding of fittings on the Granite and perfect cleaning. Little quantity is enough to properly clean granite surfaces.

Supplied in 0.75 Kgs package plastic container.



MICROFLAT CAST IRON SURFACE PLATES

Cast Iron Surface Plates provide a precision reference for spotting, tool making, inspection of parts, checking accuracy of other surfaces and for many types of gauging and marking out operations:



SALIENT FEATURES:

- » Made generally as per IS-2285-2003
- » Made from good quality close grained high duty Cast Iron Castings conforming to Grade FG-220 of IS-210, duly stress relieved
- » Top surface offered with hand-scrapped finish.
- » Flatness deviation of any local area of 250 x 250 mm of working surface not exceeding - 0.003 mm for Grade-0, 0.007 mm for Grade-1, 0.015 mm for Grade-2 and 0.030 mm for Grade-3.
- » Rexine cover provided for top working surface and edges.
- » Small Surface Plates up to 630 x 630 mm provided with Mild Steel handles for lifting, larger Surface Plates without handles but provided with cored holes in periphery for lifting mechanically.
- » Cast Iron individual column type floor Stand/M.S. Fabricated Stand/Cupboard type Stand with leveling screws shall be supplied on request at extra cost.
- » Additional features like grid lines for location, tapped holes, T-slots, T-slots with Bench Center attachment, etc. provided upon request at extra cost.

STANDARD SIZES AND TOLERANCE OF FLATNESS				
Sizes in mm (L x B)	Flatness tolerances of various Grades (microns)			
	Grade-0	Grade-1	Grade-2	Grade-3
60 x 100	3.0	6.0	12.0	25.0
250 x 160	3.5	7.0	14.0	27.0
250 x 250	3.5	7.0	15.0	30.0
400 x 250	4.0	8.0	16.0	32.0
400 x 400	4.5	9.0	17.0	34.0
630 x 400	5.0	10.0	20.0	39.0
630 x 630	5.0	10.0	21.0	42.0
1000 x 630	6.0	12.0	24.0	49.0
1000 x 1000	7.0	14.0	28.0	56.0
1600 x 1000	8.0	16.0	33.0	66.0
2000 x 1000	9.5	19.0	38.0	76.0
2500 x 1600	11.5	23.0	46.0	92.0

NON-STANDARD AND LARGER SIZES		
300 x 300	450 x 300	450 x 450
500 x 500	600 x 450	600 x 600
750 x 750	900 x 600	900 x 900
1000 x 750	1200 x 600	1200 x 900
1200 x 1200	1500 x 750	1500 x 1000
1500 x 1200	1500 x 1500	1800 x 1200
2000 x 1250	2000 x 1500	2000 x 2000
2400 x 1200	2500 x 1000	2500 x 1500
2500 x 1600	2500 x 2000	3000 x 1000
3000 x 1250	3000 x 1500	3000 x 2000
4000 x 1000	4000 x 1500	4000 x 2000

» Custom built and special sizes on request

» Other sizes on request.

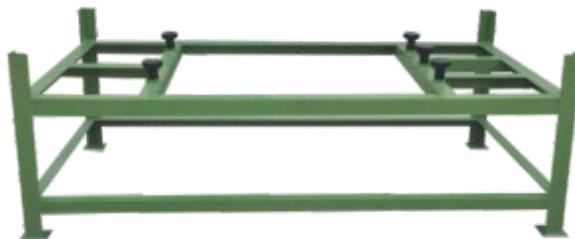
Types of Stands:



M.S Fabricated Stand With Cupboard



C.I Column type Stand



M.S Fabricated Stand

MICROFLAT LAPPING PLATES

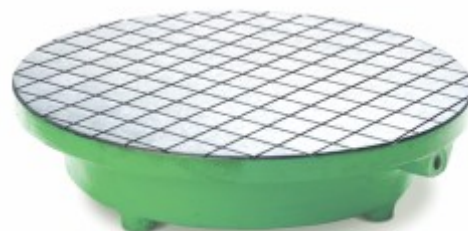
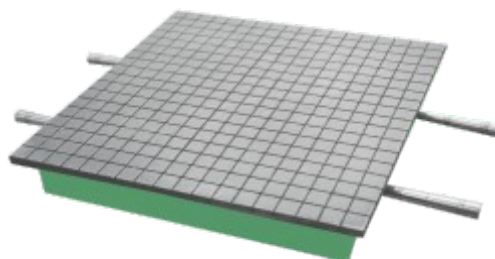
Cast Iron Lapping Plates are extensively used for accurate hand-lapping of ferrous and non-ferrous parts to obtain a perfect surface form & flatness:

SALIENT FEATURES:

- » Material specification and constructional features similar to Cast Iron Surface Plates.
- » Offered in Square type, Rectangular type & Round type
- » Top surface provided with 3x3 mm grooves at a pitch of 25-30 mm.
- » Top surface offered duly hand-scraped/lapped finish
- » M.S. Handles provided for lifting and handling for sizes up to 630 x 630 mm etc. provided upon request at extra cost.
- » Granite Lapping plates are also available.

STANDARD SIZES AND TOLERANCE OF FLATNESS			
Square and Rectangular type		Round type	
Size in mm (L x B)	Flatness tolerance (microns)	Size in mm (Diameter)	Flatness tolerance (microns)
100 x 100	4.0	100	4.0
150 x 150	5.0	150	5.0
160 x 100	6.0	200	5.0
250 x 160	7.0	250	7.0
250 x 250	7.0	300	7.0
400 x 250	8.0	400	9.0
400 x 400	9.0	450	9.0
500 x 500	10.0	500	9.0
630 x 400	10.0	600	10.0
630 x 630	10.0	750	12.0
750 x 750	12.0	900	12.0
900 x 600	12.0	1000	14.0
1000 x 630	12.0	-	-
1000 x 1000	14.0	-	-

» Other sizes on request



MICROFLAT PRECISION INSPECTION BENCH CENTERS

Precision Inspection Bench Center is a testing device of high degree of accuracy which enables quick and precise inspection of jobs, ideally suited in Machine Shops, Tool Rooms and Standard Rooms for checking various parameters like Concentricity, Face / Radial Run-out, True running, etc.



STANDARD SIZES AVAILABLE IN CAST IRON AND GRANITE BASE					
o Sizes in mm		o ABC = Admit Between Center		o HC = Height of Center	
ABC	HC	ABC	HC	ABC	HC
300	125	1000	125	2000	125
300	160	1000	160	2000	160
300	200	1000	200	2000	200
300	250	1000	250	2000	250
300	300	1000	300	2000	300
500	125	1250	125	2500	125
500	160	1250	160	2500	160
500	200	1250	200	2500	200
500	250	1250	250	2500	250
500	300	1250	300	2500	300
750	125	1500	125	3000	125
750	160	1500	160	3000	160
750	200	1500	200	3000	200
750	250	1500	250	3000	250
750	300	1500	300	3000	300

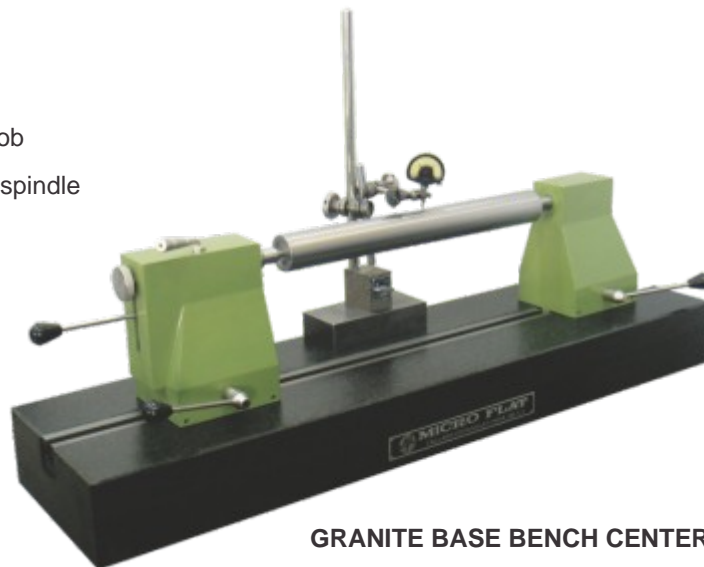
» Other sizes and large sizes on request.

SALIENT FEATURES:

- » Made generally conforming to IS-5980-1978
- » Base of C.I. Bench Center made out of closed grained Cast Iron conforming to Grade FG-220 of IS-210.
- » Castings stress relieved as a precaution against distortion. Bench Center Bodies for both Cast Iron and Granite Base are easily adjustable to required positions.
- » For Granite Base Bench Center Metallic T-slots (Cast Iron) shall be provided and the Base is provided in precision Lapped finish.
- » One of the Center is spring loaded to ensure uniform pressure while loading the work pieces and easy loading and unloading.
- » Vertical Bench Centers are offered standard & also with Ball screw and guide-ways.
- » **Extra accessories on request at extra cost**
 - Sliding Fixture for mounting dial stand with magnetic base
 - Roller Support attachment for heavy job
 - Additional 'V' aligned and matched on top of each Centers
 - Stub Centers
 - Carbide Tipped Dead Centers
 - Taper and Parallel Test Mandrels
 - M.S. Stand with leveling screws
 - Steady Rest for extra long and heavy job
 - Special Bench Center Bodies with live spindle



PRECISION VERTICAL BENCH CENTER



GRANITE BASE BENCH CENTER

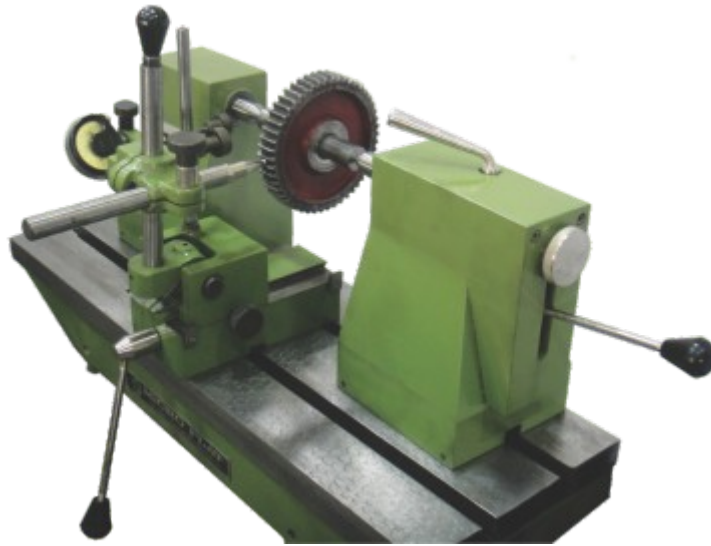
VERTICAL BENCH CENTERS, STANDARD SIZES AVAILABLE					
o Sizes in mm		o ABC = Admit Between Center		o HC = Height of Center	
ABC	HC	ABC	HC	HC	ABC
300	100	500	100	100	750
300	150	500	150	150	750
300	200	500	200	200	750

» Other sizes on request



MICROFLAT GEAR PCD RUNOUT CHECKING ATTACHMENT

An economical and versatile fixture to be used along with Inspection Bench Centers for checking PCD of Spur/Helical Gears with reference to the Gear Axis. Provided with a set of 3 suitable locking balls to suit the modules between 1.5 to 7 and corresponding diametrical pitches of Gear Spring Loaded bracket holding locking balls is mounted on a slide, which can be locked in any position to suit varying diameters.



MICROFLAT CONCENTRICITY CHECKING ATTACHMENT

This is an ideal attachment, which is to be used along with Cast Iron/Granite Base Inspection Bench Centers/T-slotted Surface Plates for checking concentricity of stepped, hollow shafts and spindles.

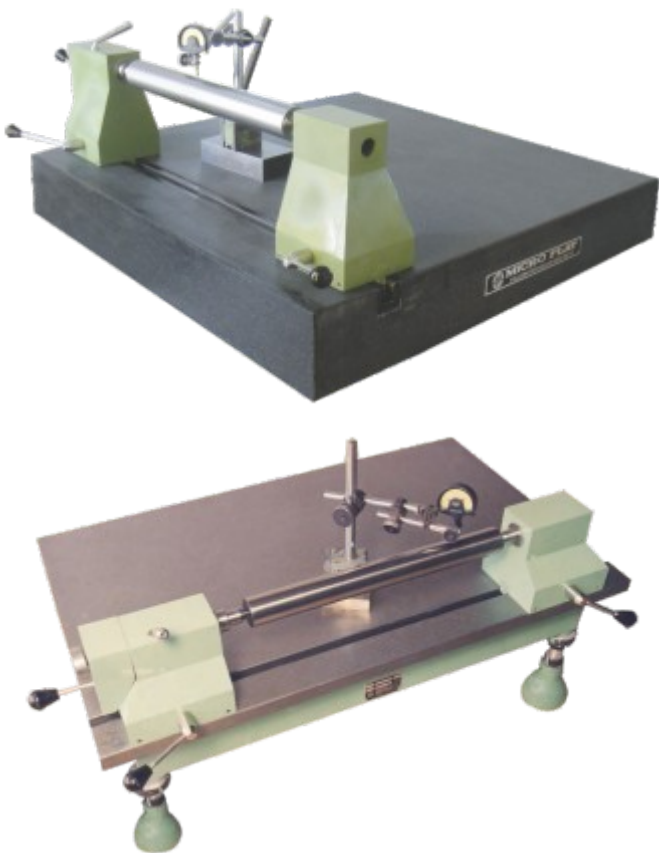


SALIENT FEATURES:

- » V-Blocks/Supports are adjustable in all directions.
- » Hardened and Ground Roller pins per V-Block provides Straight line contacts and could be removed and replaced as they wear out.
- » Soft brass rollers can also be supplied for inspection of super finished surfaces on shaft/bearings.
- » Special Concentricity Checking Attachment with Ball screw for slides available on request.
- » Sliding Fixture for mounting dial stand with magnetic base.
- » Setting Mandrels for alignment of Axis of 'V's available on request.

MICROFLAT SURFACE PLATES WITH CENTER ATTACHMENTS

This equipment can be used as a Precision Inspection Bench Center as well as a Surface Plate (two-in-one) with high Grade of accuracy. Material of construction and accuracy parameters as per IS-2285-2003 for Cast Iron Surface Plate, IS-7327-2003 for Granite Surface Plate and IS-5980-78 for Center Attachments.



STANDARD SIZES AVAILABLE	
Size of Surface Plate (L x B)	Admit Between Center Available approx. (mm)
1000 x 630	550
1000 x 1000	550
1200 x 900	750
1600 x 1000	1150
2000 x 1000	1550
3000 x 1000	2550

Height of Center Attachment (mm): 125, 160, 200, 250, 300, 400, 500
» Other sizes on request

MICROFLAT UNIVERSAL BENCH CENTER

For checking Concentricity, Parallelism, Axial Run-out, Taper Angle and Taper form. Sine Rollers allow quick and easy taper Angle and Taper form measurements in conjunction with Gauge Blocks. It can also be used for layout work, in conjunction with indicator Stands and Surface Plates. Removable Centers, for mounting extra long parts directly on v-ways.



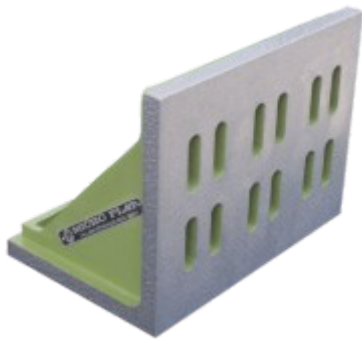
STANDARD SIZES AVAILABLE					
Center distance (mm)	Ht. of Center (mm)	Center distance of Sine Rollers (mm)	Co-Axiality of Centers (µm)	Parallelism of Axis (µm)	Roller Center Distance (µm)
0 - 200	75	400	5	5	5
0 - 300	75	500	5	5	5

» Other sizes on request



MICROFLAT CAST IRON SLOTTED AND WEBBED ANGLE PLATES

They are used for clamping and work holding in vertical position and as vertical reference for layout, machining and inspection. They make an ideal fixture for shaping, planning, milling, grinding, horizontal boring and drilling operation.



- » Hand-scraped Angle Plates slotted and webbed available in Grade-1 and Grade-2 accuracies made generally as per IS-2554-1971.
- » Made from high duty close grained Cast Iron Castings conforming to Grade FG-220 of IS-210.
- » Angle Plates un-slotted and webbed end type, open end type with cored slots can be made on request at extra cost.
- » Precision Angle Plates having dimensional specification same as per slotted and webbed Angle Plates but accuracy as per IS-6973-1973 can be made on request at extra cost.

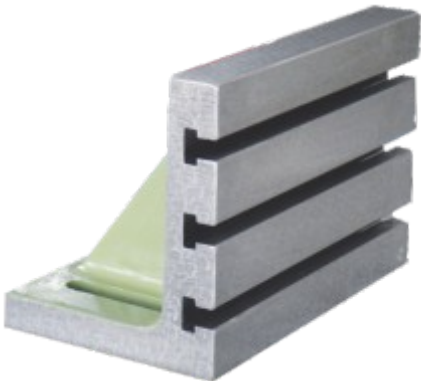
STANDARD SIZES AS PER IS-2554-1971

Tolerances of Standard size Angle Plates (microns)								
Sizes (mm) (L x B x H)	Flatness of working faces		Squareness of working faces over dimension 'H'		Parallelism of opp. faces & edges over their total length		Squareness of end faces w.r.t. exterior faces as measured dimension-L	
	GR-1	GR-2	GR-1	GR-2	GR-1	GR-2	GR-1	GR-2
125 x 75 x 100	5	25	10	50	13	63	13	63
175 x 100 x 125	5	25	13	50	15	63	15	63
250 x 150 x 175	8	38	15	75	18	88	18	88
350 x 200 x 250	8	38	18	75	20	88	20	88
450 x 300 x 350	10	50	18	100	20	113	20	113
600 x 400 x 450	10	50	20	100	23	113	23	113

» Other sizes and large sizes on request.

MICROFLAT CAST IRON T-SLOTTED ANGLE PLATES

Dimensional and Technical features same as that of Cast Iron slotted and webbed Angle Plates as per IS-2554-71 but vertical face is provided with horizontally Machined T-slots and the base/table face is having cored slots. T-slot details are as under:



Size in mm (L x B x H)	Size of T-slots (mm)	No. of T-slots (mm)	Pitch of T-slots (mm)
125 x 75 x 100	10	2	40
175 x 100 x 125	12	2	50
250 x 150 x 175	12	3	50
350 x 200 x 250	14	3	80
450 x 300 x 350	18	3	100
600 x 400 x 450	18	4	100

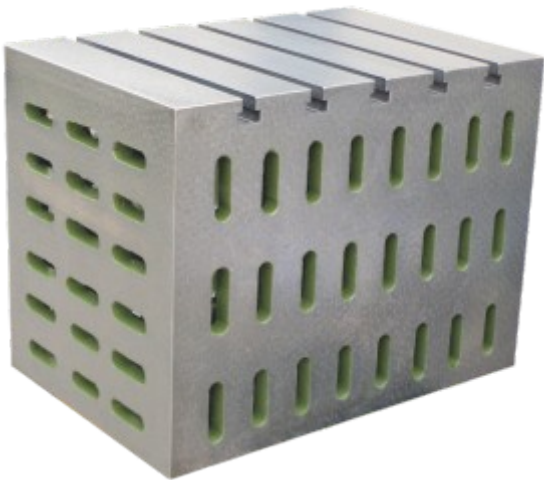
NON-STANDARD SIZES ANGLE PLATES (mm)		
75 x 75 x 75	100 x 100 x 100	125 x 125 x 125
150 x 150 x 150	200 x 200 x 200	225 x 225 x 225
250 x 250 x 250	300 x 300 x 300	300 x 300 x 300
400 x 400 x 400	500 x 500 x 500	600 x 600 x 600
600 x 600 x 1000	700 x 420 x 700	750 x 450 x 600

MICROFLAT CAST IRON BOX ANGLE PLATES

Useful as a versatile tool for layout, machine set-ups, tooling and inspection. Can also be used as right angles or squares. Matched pairs can be used as parallels and height blocks. A job can be fixed with one of the faces and rotated in five planes without the need for repositioning or disturbing accuracy.

SALIENT FEATURES:

- » Made generally as per IS-6232-71 in Grade-1 and Grade-2 accuracies with hand-scraped surface finish.
- » Made from high duty close grained Castings conforming to Grade FG-220 of IS-210. Castings duly stress relieved.
- » Machined T-slots on one face and cored elongated slots on four opposite faces provided for clamping purpose.
- » Matched pairs can be offered on request at extra cost.
- » Precision Box Angle Plates as per IS-6985-1973 having tolerances approx. half of those mentioned in the table can be made on request at extra cost.



STANDARD SIZES AS PER IS-6232-1971						
Tolerances of Standard size Angle Plates (microns)						
Sizes (mm) (L x B x H)	Flatness of working surfaces		Squareness of working surfaces		Parallelism of opposite faces	
	GR-1	GR-2	GR-1	GR-2	GR-1	GR-2
125 x 75 x 100	5	25	10	50	13	63
175 x 100 x 125	5	25	13	50	15	63
250 x 150 x 175	8	38	15	75	18	88
350 x 200 x 250	8	38	18	75	20	88
450 x 300 x 350	10	50	18	100	20	113
600 x 400 x 450	10	50	20	100	23	113

» Other sizes and large sizes on request.

MICROFLAT CAST IRON SWIVEL ANGLE PLATES

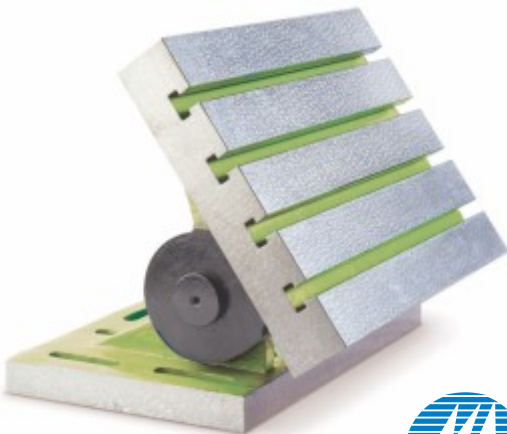
Job can be quickly and correctly set at any Angle with the adjustable angle Plates. They are graduated for setting 0-90° & can be easily adjusted manually and locked in adjusted position by means of two locking nuts. For setting purpose, a degree scale, reading minimum one degree, is graduated on the boss itself. This ensures better setting accuracy. Swivelling face is provided with T-slots Machined from solid. Other face is provided with cored elongated slots for clamping the Angle Plate on the Machine Table.

SALIENT FEATURES:

- » Made from close grained Cast Iron Casting conforming to Grade FG-220 of IS-210. Casting duly stress relieved.
- » Working faces flat within 0.010 mm per 300 mm and square and parallel within ±0.04 mm per 300 mm in two extreme positions.
- » Edges parallel and square within 0.05 mm per 300 mm
- » T-slots parallel to the edges within 0.05 mm per 300 mm.

Size (mm) L x B x H	Details of T-slots		
	Size of T-slot	No. of T-slot	Pitch of T-slot
200 x 150 x 150	14	3	40
300 x 250 x 250	14	4	63
400 x 300 x 300	14	4	63
500 x 400 x 400	14	4	100
600 x 400 x 400	14	4	100

» Other sizes on request



MICROFLAT CAST IRON TILTING TABLES

Cast Iron Tilting Table is a useful accessory for setting work at an Angle for Milling or other operations. The Table has Machined T-slots along length and can swing up to 45° on either side. For setting purpose a degree scale, reading minimum one degree, is graduated on the end face of cylindrical base itself. This ensures better setting accuracy. The Table is set manually to the required tilt and is locked in the set position by means of two locking clamps held through bolts.

SALIENT FEATURES:

- » Made from close grained plain Cast Iron Castings conforming to Grade FG-220 of IS-210. Casting duly stress relieved.
- » Table top and base are flat and parallel within 0.05 mm per 300 mm
- » T-slots are parallel to the edge of the table and the cylindrical base within 0.05 mm per 300 mm.
- » T-slots parallel to the edges within 0.05 mm per 300 mm

Size (mm) L x B x H	Details of T-slots		
	Size of T-slot	No. of T-slot	Pitch of T-slot
300 x 150 x 110	14	3	50
400 x 300 x 200	14	3	100
450 x 225 x 150	14	3	65
500 x 500 x 300	14	4	125
600 x 300 x 200	14	3	100
1000 x 500 x 300	14	4	100

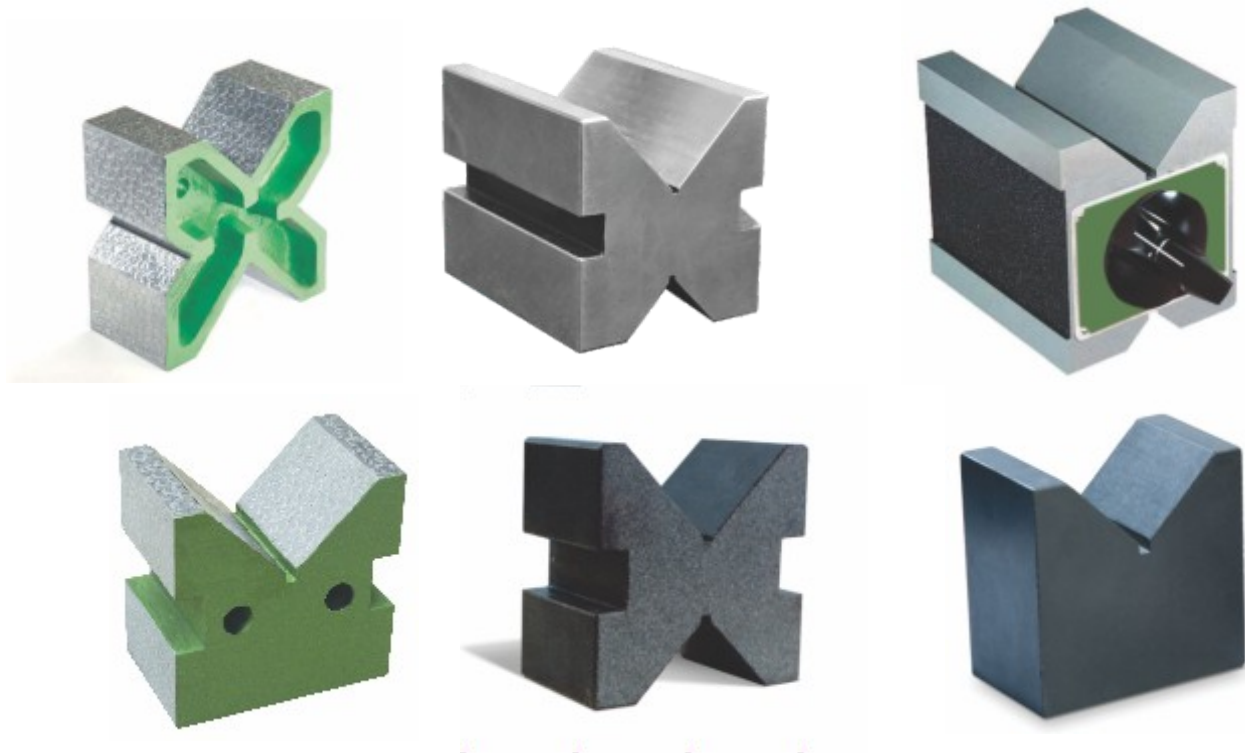


» Other sizes on request

MICROFLAT V-BLOCKS

- » Cast Iron Plain V-Blocks
 - » Cast Iron Elongated V-Blocks
 - » Cast Iron universal V-Blocks
- » Hardened and Ground Steel V-Blocks
 - » Granite V-Blocks
 - » Magnetic V-Blocks

V-Blocks are widely used in Workshops, Tool Rooms & Standard Rooms for variety of application in Tooling and Inspection purposes such as marking accurate Centers, checking Concentricity, Parallelism, etc.



SALIENT FEATURES:

- » Cast Iron Universal V-Blocks, Cast Iron Plain V-Blocks and Cast Iron Elongated V-Blocks are made from close grained Cast Iron Castings conforming to Grade FG-220 of IS-210, offered duly hand-scraped finish.
- » Universal V-Blocks & Elongated V-Blocks are generally conforming to IS-4960-1968 and Plain V-blocks are generally conforming to IS-2949-1992.
- » Steel V-Blocks are made from hardened & ground alloy steel having hardness 55 - 60 HRC generally conforming to IS 2949- 1992 available in different Grades of accuracies. i.e. Grade-0, Grade-1 and Grade-2 accuracy limits, having included Angle $90^{\circ} \pm 5'$.
- » Granite V-Blocks made from good quality Granite, working faces offered duly finely lapped finish having included Angle $90^{\circ} \pm 5'$.
- » Magnetic V-Block has a total 3 Magnetic surfaces. Top and bottom with 90° V-Angle and end surface opposite to switch. Magnetic V-Blocks are offered in two types i.e. soft and hardened.
- » Clamps offered for Plain V-Blocks (Cast Iron and hardened and ground steel and Granite V-Blocks) on request.

STANDARD SIZES IN PLAIN V-BLOCKS (CAST IRON AS PER IS-2949-74) AND GRANITE V-BLOCKS		STANDARD SIZES STEEL V-BLOCKS AS PER IS-2949-1992	
Size in mm (W x L x H)	Clamping Range (mm)	Size in mm (W x L x H)	Clamping Range (mm)
40 x 50 x 40	5 - 40	40 x 50 x 40	4 - 40
50 x 50 x 50	5 - 50	40 x 75 x 40	6 - 40
50 x 63 x 50	5 - 50	40 x 100 x 40	7 - 40
80 x 63 x 80	7 - 80	50 x 150 x 45	8 - 50
100 x 63 x 100	8 - 100	70 x 200 x 55	10 - 100
140 x 70 x 140	9 - 140	85 x 250 x 65	11 - 850
63 x 80 x 63	7 - 63	100 x 300 x 75	12 - 100
80 x 100 x 80	7 - 80		
200 x 150 x 200	10 - 200		
200 x 200 x 200	10 - 200		

CAST IRON UNIVERSAL TYPE V-BLOCKS AS PER IS-4960-1968	CAST IRON ELONGATED TYPE V-BLOCKS AS PER IS- IS-4960-1968
Standard Sizes in mm (W x L x H)	Standard Sizes in mm (W x L x H)
100 x 63 x 100	40 x 100 X 30
160 x 80 x 160	50 x 160 X 35
200 x 100 x 200	63 x 200 X 63
300 x 125 x 300	100 x 300 X 63

STANDARD SIZES OF MAGNETIC V-BLOCKS					
Sizes in mm (W x L x H)	Clamping Range (mm)	Pull capacity (Kgs)	Flatness (μ m)	Squareness (μ m)	Parallelism (μ m)
40 x 40 x 50	3 – 25	25	5	5	5
56 x 75 x 75	5 – 40	75	5	5	5
70 x 100 x 95	5 – 65	100	5	5	5
75 x 150 x 100	5 – 70	125	10	10	10
125 x 200 x 150	10 – 150	175	10	10	10

» Other sizes on request in all type



MICROFLAT CAST IRON STRAIGHT EDGES

Cast Iron Straight Edges are widely used for setting up and leveling machinery and for checking and spotting bearing surfaces during hand scrapping operations. Properly supported, they may be used with various indicating devices to check surface flatness of large Machined areas like Surface Tables, Machine Tables & Beds, Machine guide ways, etc.



SALIENT FEATURES:

- » Offered in two types viz. Bow shaped or Camel Back type and I-Section or Parallel type, made generally as per IS-5268-1991.
- » Bow shaped Straight Edges are provided with pads on their bow for supporting Engineer's Level.
- Made from close grained Cast Iron Castings conforming to Grade FG-220 of IS-210. Casting duly stress relieved.
- » Offered in hand-scrapped finish to various Grades.
- » High spots uniformly distributed. Proportion of bearing area of the working surface not less than 20% for Grade-0 and Grade-1 and not less than 10% for Grade-2 accuracy Straight Edges.
- » Flatness of side faces: Any 300 mm length flat within 25 microns for Grade-0, Grade-1 and within 50 microns for Grade-2.
- » Squareness of working surfaces and side faces when checked with side face laid on Grade-1 Surface Plate:
For Grades-0 and 1: Within 8 microns per 25 mm
For Grade-2: Within 15 microns per 25 mm
- » **Parallelism of side faces:**
For Grades-0 and 1: Not exceeding 30 microns per 300 mm and 60 microns over total length.
For Grade-2: Not exceeding 60 microns per 300 mm and 120 microns over any total length.
- » Supplied with rexine cover for protection of working surfaces.
- » Actual dimensions of Straight Edges may be more than those stated in the Tables.

STANDARD SIZE FOR CAMEL BACK/BOW TYPE & TOLERANCE ON FLATNESS AND PARALLELISM						
Length of St. Edge	Min. width of working face	Min. overall depth	Min. flange thickness	Tolerance on flatness and parallelism		
				Grade-0	Grade-1	Grade-2
(mm)	(mm)	(mm)	(mm)	(µm)	(µm)	(µm)
300	30	80	10	2	3	6
500	35	130	12	3	5	10
800	40	175	14	3	6	10
1000	45	180	16	5	10	20
1600	55	275	20	6	12	20
2000	65	300	24	10	20	40
3000	90	400	32	15	30	60
4000	100	500	38	20	40	80
5000	100	550	46	25	50	100

» Other sizes on request

STANDARD SIZE FOR PARALLEL/I-SECTION & TOLERANCE ON FLATNESS AND PARALLELISM

Length of St. Edge	Min. width of working face	Min. overall depth	Min. flange thickness	Tolerance on flatness and parallelism		
				Grade-0	Grade-1	Grade-2
(mm)	(mm)	(mm)	(mm)	(μm)	(μm)	(μm)
300	25	75	8	2	3	6
500	30	75	10	3	5	10
800	30	80	10	3	6	10
1000	35	100	12	5	10	20
1600	50	150	12	6	12	20
2000	50	150	14	10	20	40
3000	55	250	16	15	30	60
4000	60	300	18	20	40	80
5000	65	350	20	25	50	100

» Other sizes on request

MICROFLAT CAST IRON PRISMATIC/TRIANGULAR STRAIGHT EDGES

Cast Iron Prismatic or Triangular Straight Edges are used for trueing, spotting and reconditioning of dovetail guide-ways of Machine Tools, Slide and similar work pieces.



SALIENT FEATURES:

- » Made from close grained Cast Iron Castings conforming to Grade FG-220 of IS-210. Castings duly stress relieved.
- » Provided with suitable M.S. handles at both the ends.
- » Offered in two Grades of accuracies as under:
 - » Grade-1 : Having atleast 25 bearing spots in 25 x 25 mm area. Maximum error in specified Angle between working surfaces being within $\pm 5'$.
 - » Grade-2 : Having atleast 20 bearing spots in 25 x 25 mm area. Maximum error in specified Angle between working surfaces being within $\pm 10'$.
- » Offered various sizes with various working Angles between working faces as shown in the table:

Length	Working Angles (in degree) & corresponding width of working faces (mm)				
(mm)	30°	45°	50°	55°	60°
250	50	50	50	45	45
300	50	50	50	45	45
500	70	70	70	60	60
600	70	70	70	60	60
750	90	90	90	80	80
1000	110	110	110	100	100
1250	130	130	130	110	110
1500	160	160	160	130	130
2000	200	200	200	160	160

» Other sizes on request



MICROFLAT 90 DEGREE VEE TYPE STRAIGHT EDGES

These are mainly used for machine guide ways. One side is provided flat and the other side is provided with 90° 'V'. Accuracies of 'V' portion shall be similar to Cast Iron Triangular St.Edges and flat portion shall be similar to Parallel St.Edges. The standard sizes available are as under, other parameters shall remain same as per IS-5268-1991.



STANDARD SIZES AVAILABLE Length in mm	
	300
	600
	750
	1000
	1500
	2000

» Other sizes and large sizes on request.

MICROFLAT GRANITE STRAIGHT EDGES

- » Made from good quality Indian Black Granite
- » Working faces offered duly precision lapped finish
- » Rexine cover provided for protection of working faces



STANDARD SIZES AVAILABLE	
Sizes (mm)	Straightness & Parallelism (µm)
300 x 100 x 50	2
500 x 100 x 50	3
750 x 125 x 75	3
1000 x 150 x 75	5
1600 x 200 x 75	6
2000 x 200 x 75	8

» Other sizes on request

Microflat Aluminium Straight Edges, Parallel type (I-Section)

Light weight hard anodized aluminium straight edge having working surfaces hand lapped finish.



Size in mm (L x W x T)	Straightness (µm)
500 x 80 x 15	7
750 x 80 x 15	9
1000 x 80 x 15	12
1500 x 80 x 15	17
2000 x 80 x 15	22

» Other sizes on request

MICROFLAT HARDENED & GROUND STEEL STRAIGHT EDGES

- » Steel Straight Edges made generally as per IS-2220-1990.
- » Made from Alloy Steel hardened and ground.
- » Available in I-section and Parallel Type.



STANDARD SIZES AVAILABLE				
Size in mm (L x W x T)	Straightness Accuracy for various Grades (µm)			
	Grade-00	Grade-0	Grade-1	Grade-2
300 x 35 x 8	4	7	12	21
500 x 50 x 8	4	7	12	21
750 x 50 x 8	6	9.5	17	27
1000 x 50 x 8	8	12	21	33
1500 x 70 x 10	-	17	29	46
2000 x 70 x 10	-	22	37	58
2500 x 75 x 15	-	27	46	71
3000 x 85 x 18	-	32	54	83
4000 x 100 x 20	-	42	71	108

» Other sizes on request

MICROFLAT HARDENED AND GROUND KNIFE EDGE STRAIGHT EDGES (BEVELLED EDGE)

SALIENT FEATURES:

- » Made from high quality Steel
- » Hardened and ground to 58±2 HRC
- » Working faces ground/lapped finish
- » Accuracy as per IS-3512-1966



STANDARD SIZES AVAILABLE		
Length (mm)	Width (mm)	Thickness (mm)
50	30	8
75	35	8
100	40	10
150	40	10
200	50	12
250	50	12
300	60	12
500	50	15
600	60	20
750	60	20
1000	60	20

» Other sizes and large sizes on request.

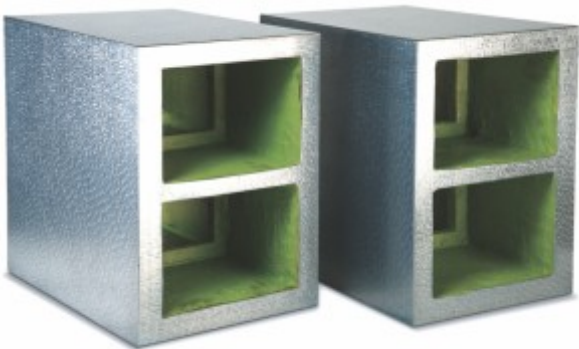


MICROFLAT CAST IRON HOLLOW BOX PARALLEL

Cast Iron Box Parallels are extensively used in machine shops for set up and machining operations, building up height of work piece on machine tables and for mounting work piece for scribing and inspection.

SALIENT FEATURES:

- » Made generally as per IS-4241-1990
- » Made from close grained Cast Iron Casting conforming to Grade FG-220 of IS-210. Casting duly stress relieved.
- » Working faces offered with hand-scraped finish or ground finish to required tolerances as per IS.
- » Tapped holes/T-slots/slots can be provided on request at extra cost.
- » Box Parallels can be offered as matched pairs on request at extra cost.
- » Box Parallels with finer accuracies can be offered than stipulated in the IS, on special request at extra cost.



STANDARD SIZES AVAILABLE

Length (mm)	Width (mm)	Height (mm)
100	100	100
150	150	100
300	200	125
250	250	250
350	350	250
150	150	150
200	200	200
300	300	300

» Other sizes on request

MICROFLAT STEEL PARALLELS

These are used in Machine Shops for set up and Machining operations, building up height of work on Machine Tables and for mounting work for scribing and inspection.

SALIENT FEATURES:

- » Made generally as per IS-4241-1990
- » All the four longitudinal sides offered flat parallel
- » Working faces offered duly ground finish
- » Steel Parallels offered as matched pairs



STANDARD SIZES AND TOLERANCES FOR GRADE - 1 & 2

Size in mm (L x W x T)	Parallelism between Working faces (µm)		Matching tolerance (µm)	
	Grade - 1	Grade - 2	Grade - 1	Grade - 2
100 x 10 x 5	4.0	8.0	6.0	12.0
125 x 20 x 10	4.0	8.0	6.0	12.0
150 x 30 x 15	4.0	8.0	6.0	12.0
200 x 40 x 20	4.0	8.0	6.0	12.0
250 x 50 x 25	6.0	12.0	10.0	20.0
300 x 60 x 30	6.0	12.0	10.0	20.0
350 x 80 x 40	-	14.0	-	20.0
400 x 100 x 50	-	16.0	-	25.0

» Other sizes on request

MICROFLAT GRANITE PARALLELS

These are used in Machine Shops for set up and Machining operations, building up height of work on Machine Tables and for mounting work for scribing and inspection. Granite Parallels being rust proof are preferred where coolants are used.

STANDARD SIZES AND TOLERANCES		
Size in mm (L x W x T)	Parallelism between Working faces (µm)	Matching tolerance (µm)
100 x 30 x 15	2.0	3.0
100 x 40 x 20	2.0	3.0
100 x 50 x 25	2.0	3.0
150 x 50 x 25	3.0	5.0
150 x 80 x 40	3.0	5.0
150 x 70 x 50	3.0	5.0
200 x 100 x 50	3.0	5.0
300 x 100 x 50	3.0	5.0
400 x 100 x 50	5.0	8.0
500 x 100 x 50	5.0	8.0

» Other sizes on request

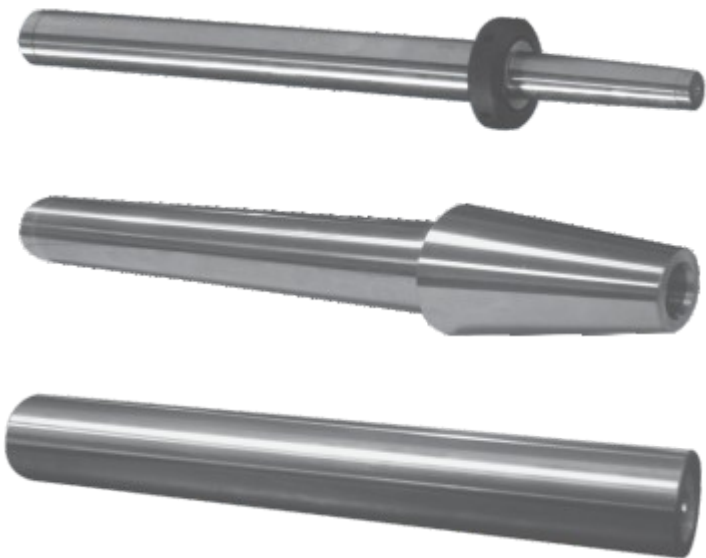
SALIENT FEATURES:

- » Working faces offered duly precision hand-lapped finish
- » All the four longitudinal sides offered flat parallel
- » Granite Parallels offered in matched pairs



MICROFLAT TEST MANDRELS

- » Test Mandrels are mainly used for Machine Tool Acceptance Test.
- » Test Mandrels are made generally as per IS-2063-2002.
- » Made from good quality alloy steel, heat-treated for maximum stability and wear resistance.
- » Test Mandrels Metric, SK, BT, HSK & other series offered on request.
- » Provided with teak-ply storing case on request at extra cost.



STANDARD SIZES AVAILABLE	
Taper Test Mandrels (mm)	Parallel Test Mandrels (mm)
MT-2 x 300/500	40 Ø x 300/500/600
MT-3 x 300/500	50 Ø x 300/500/600
MT-4 x 300/500	60 Ø x 300/500/600
MT-5 x 300/500	80 Ø x 750
MT-6 x 300/500	80 Ø x 900
ISO-40 x 300/500	80 Ø x 1000
ISO-50 x 300/500	100 Ø x 1200

» Other sizes and large sizes on request



MICROFLAT MASTER CYLINDERS / CYLINDRICAL SQUARE

They provide most reliable reference standards for checking squareness of vertical axis with reference to horizontal axis.

SALIENT FEATURES:

- » Made generally as per IS-6952-1990
- » Made from good quality alloy steel, heat-treated for maximum stability and wear resistance.
- » Periphery precision ground and lapped to a fine surface finish.
- » Ends are recessed and have lapped finish.
- » Provided with teak-ply storing case on request at extra cost.



STANDARD SIZES (mm)			NON-STANDARD SIZES (mm)		
L x Ø (mm)	Squareness (µm)	Flatness of end faces (µm)	L x Ø (mm)	Squareness (µm)	Flatness of end faces (µm)
150 x 70	2.0	300 x 85	300 x 85	5.0	2.5
220 x 90	3.0	450 x 85	450 x 85	7.0	4.0
300 x 95	5.0	500 x 85	500 x 85	8.0	4.0
450 x 120	7.0	600 x 85	600 x 85	9.0	5.0
600 x 140	9.0	750 x 100	750 x 100	11.0	6.0
750 x 160	11.0	1000 x 150	1000 x 150	15.0	7.0

» Finer accuracies and other sizes on request.

MICROFLAT GRANITE SQUARES

Granite Squares provide one of the most reliable squareness inspection reference. Work is positioned against the square and sighted for checking squareness of components by comparison method. Granite Squares are also used for checking squareness of measuring axis in Co-ordinate Measuring Machines and geometrical alignment of Machine Tools.



STANDARD SIZES AVAILABLE	
Sizes (H x L x B) (mm)	Squareness accuracy (microns)
200 x 125 x 75	2.0
300 x 200 x 75	3.0
400 x 250 x 75	4.0
500 x 300 x 75	5.0
600 x 400 x 75	6.0
1000 x 600 x 100	8.0
1000 x 1000 x 100	10.0

» Other sizes on request

SALIENT FEATURES:

- » Made from good quality Granite.
- » Two working surfaces are provided with lapped finish (H x B & L x B)
- » Suitable holes are provided for lifting and handling.
- » Finer accuracies can also be achieved on request at extra cost.
- » Teak-ply storing case is provided on request at extra cost.
- » For special applications, other surfaces can also be made flat and square to required tolerance on request at extra cost.

MICROFLAT CAST IRON SQUARE (RIGHT ANGLES)

SALIENT FEATURES:

- » Made from close grained Plain Cast Iron Castings conforming to Grade FG-220 of IS-210. Casting duly stress relieved.
- » Working surfaces and sides offered duly hand-scraped finish
- » Two working surfaces provided (H x B & L x B)
- » Finer accuracies can also be achieved on request at extra cost
- » Teak-ply storing case provided on request at extra cost

STANDARD SIZES AVAILABLE	
Sizes in mm (H x L x B)	Accuracy (microns)
300 x 200 x 50	3
400 x 250 x 50	4
500 x 300 x 50	5
600 x 400 x 50	6
800 x 500 x 50	8
1000 x 600 x 50	10

» Other sizes and large sizes on request



CAST IRON RIGHT ANGLE UNIVERSAL KNEE TYPE

Universal Right Angles or Knee Angles are widely used for making fixtures as well as for checking squareness and parallelism of surfaces. All machined faces are square and parallel and job can be rotated in different planes that are square with respect to each other.



- » Made from high duty close grained Cast Iron Castings conforming to Grade FG-220 of IS-210.
- » Working faces offered duly hand-scraped finish.
- » Squareness of faces within 10 microns per 100mm.
- » Parallelism of faces within 10 microns per 100mm.
- » Finer accuracies can be offered on request at extra cost.
- » Teak-ply storing case provided on request at extra cost.

Size in mm (L x W x H)	
100 x 100 x 125	100 x 100 x 150
100 x 125 x 150	100 x 125 x 200
125 x 200 x 300	150 x 175 x 250
150 x 200 x 250	150 x 150 x 200
200 x 250 x 300	200 x 250 x 400
250 x 300 x 400	300 x 300 x 600

» Other sizes on request.



MICRO FLAT PRECISION ENGINEER'S SQUARES / TRY SQUARES

Salient Features:

- » Made generally as per IS-2103-1980.
- » Working edges hardened to 56-58 HRC.
- » Provided with an undercut at the inner corner of the stock.
- » Offered with flat edge as well as bevelled edge (inner and outer edges beveled at 60° angle).
- » Flat edge try squares offered in single piece as well as two-piece construction.
- » Larger sizes can be provided with a lifting arrangement on request at extra cost.
- » Offered with a suitable storing case.



Flat Edge



Bevelled Edge



Flat Edge

Flat Edge Try Squares (With Stock)						
Size in mm (L x W x T)	Squareness (µm)			Flatness & Straightness (µm)		
	Grade-A	Grade-B	Grade-C	Grade-A	Grade-B	Grade-C
150 x 100 x 12	4	8	18	3	4	7
200 x 140 x 15	4	9	20	3	4	8
250 x 165 x 20	5	10	23	3	5	9
300 x 200 x 20	5	11	25	-	5	10
400 x 250 x 25	-	13	30	-	6	12
500 x 300 x 25	-	15	35	-	7	14
750 x 500 x 30	-	20	48	-	10	19
1000 x 750 x 40	-	25	60	-	12	24
1200 x 800 x 50	-	29	70	-	14	28
1500 x 1000 x 50	-	-	85	-	17	34
2000 x 1200 x 60	-	-	110	-	22	44

» Other sizes on request

Flat Edge (without stock) / Bevelled Edge Try Squares						
Size in mm (L x W x T)	Squareness (µm)			Flatness & Straightness (µm)		
	Grade-A	Grade-B	Grade-C	Grade-A	Grade-B	Grade-C
150 x 100 x 6	4	8	18	3	4	7
200 x 140 x 7	4	9	20	3	4	8
250 x 165 x 8	5	11	25	3	5	10
300 x 200 x 8	5	11	25	-	5	10
400 x 250 x 10	-	15	30	-	6	12

» Other sizes on request

MICROFLAT GRANITE 6-FACE MASTER SQUARE (CUBE)

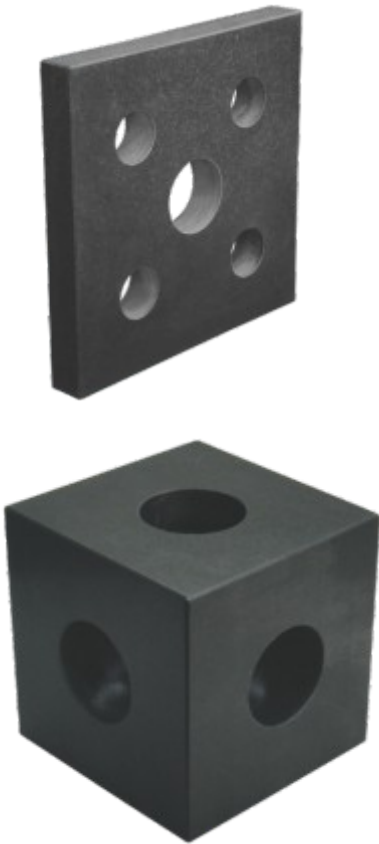
These are used mainly for gauging, inspection, squareness testing and for checking three axis geometric accuracies of Machine Tools.

SALIENT FEATURES:

- » All faces accurately lapped, opposite sides parallel & adjacent sides perpendicular to each other.
- » Provided with holes for lifting and handling.
- » All edges and corners are liberally rounded off.
- » Finer accuracies can also be achieved on request at extra cost.

STANDARD SIZES AVAILABLE			
Size (mm)	Accuracy (µm)		
(L x W x H)	Flatness	Squareness	Parallelism
300 x 300 x 50	2	3	3
400 x 400 x 60	3	4	4
500 x 500 x 80	4	5	5
630 x 630 x 80	4	5	5
750 x 750 x 100	4	7	7
1000 x 1000 x 150	5	8	8

» Other sizes and large sizes on request



MICROFLAT CAST IRON CUBE (MACHINE CHECKING MASTER FRAME)

These are used mainly for gauging, inspection, squareness testing and for checking three axis geometric accuracies of Machine Tools.

SALIENT FEATURES:

- » Made from close grained Plain Cast Iron Castings conforming to Grade FG-220 of IS-210. Casting duly stress relieved.
- » All the faces offered duly hand-scraped finish
- » Finer accuracies can also be achieved on request at extra cost
- » Teak-ply storing case provided on request at extra cost

STANDARD SIZES AVAILABLE			
Size (mm)	Accuracy (microns)		
(L x W x H)	Flatness	Squareness	Parallelism
300 x 300 x 50	4	6	6
400 x 400 x 50	6	8	8
500 x 500 x 50	8	10	10
600 x 600 x 50	8	10	10
1000 x 1000 x 75	10	12	12
1200 x 1200 x 75	12	15	15



MICROFLAT GRANITE BASE COMPARATORS/ CAST IRON BASE UNIVERSAL COMPARATORS

SALIENT FEATURES:

- » Base made from finely lapped Granite, housing made from Cast Iron and Pillar from Ground Steel.
- » Main housing slides over the pillar and can be locked at any position.
- » Fine adjustment in Bench Comparators is possible through auxiliary slides where a dial gauge is mounted.
- » Bench Comparators have throat depth of 100 mm and accept jobs up to 200 mm, to suit 8 mm thimble for admitting dial gauge.
- » Granite Base Universal Comparators are provided without fine adjustment. Column spiral grooved pillar, mounted symmetrically allows the dial gauge to be positioned over virtually all points on the Base.
- » Cast Iron Universal Comparators having hardened and ground serrated platform provided with lapped ground finish with spiral grooved column, pillar mounted symmetrically allows the dial gauge to be positioned over virtually all points on the base.



STANDARD SIZES AVAILABLE					
Granite Bench Comparator		Granite Universal Comparator		Cast Iron Base Comparator	
Base size (mm)	Flatness (microns)	Base size (mm)	Flatness (microns)	Base size (mm)	Flatness (microns)
200 x 150 x 50	2	300 x 300 x 50	3	200 x 150	5
250 x 250 x 50	2	400 x 400 x 50	3	250 x 250	5
300 x 200 x 50	3	500 x 500 x 80	4	300 x 200	5
300 x 300 x 50	3	630 x 630 x 80	5	300 x 300	5

» Finer accuracies and other sizes on request.

MICROFLAT SINE BARS

SALIENT FEATURES:

- » Made generally as per IS-5359-1987.
- » Made from alloy steel hardened and ground to 55-60 HRC.
- » Roller Center distance 100 mm, 200 mm, 300 mm, 400 mm & 500 mm.



PERMISSIBLE DIFFERENCE IN READINGS AT TEST POINTS 1 AND 2			
Nominal size L _i (mm)	Permissible Difference for setting Angle (µm)		
	15°	30°	45°
100	0.8	1.0	1.3
200	0.7	0.9	1.2
300	0.6	0.8	1.2
400	0.6	0.8	1.1
500	0.5	0.7	1.1

» Other sizes on request

MICROFLAT SINE CENTERS

They are used for holding conical objects between Centers for Inspection of parameters like Taper Angle, Run-out, etc.



Admit Between Center (mm)	Height of Center (mm)
200	75
200	150
300	75
300	150
400	75
400	150
500	75
500	150

» Other sizes and special Sine Centers on request.

- » Made generally conforming to IS-5979-1981
- » Base made from Indian Black Granite & Body made out of close grained Cast Iron Castings conforming to Grade FG-220 of IS-210, duly stress relieved.
- » Base is provided with 1 No metallic T-slot along length in the Center on top surface to accommodate Center Bodies.
- » Rollers and Dead Centers made from H & G Alloy Steel
- » Centers are mounted on V-support of the Center Body.
- » Sine Center to be mounted on a Granite Surface Plate of Grade-0 accuracy having a serrated H & G slip gauge platform.

MICROFLAT SINE TABLES

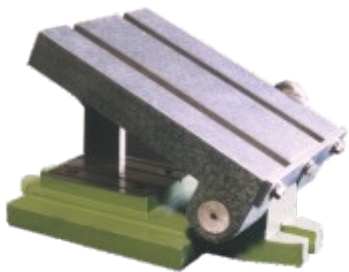
Sine Tables are extensively used with the aid of slip gauges for precise checking of tapers and also as a Fixture for Precision Machining and Grinding operation in Machine Shops, Tool Rooms and inspection Shops and Standard Rooms.

SALIENT FEATURES:

- » Made generally as per IS-5939-1970 (Single Angle) and IS-5943-1970 for (Compound Angle).
- » Base and swiveling face are made from high duty closed grained Cast Iron Casting conforming to Grade FG-220 of IS-210, duly stress relieved.
- » Working faces are offered in ground/hand-scraped finish.
- » Roller and slip gauge platform made from alloy steel hardened and ground.
- » Sine Tables (Single Angle & Compound Angle) are available with Magnetic Chuck
- » Top Table can be provided with holes instead of T-slots on both the types.
- » For SST, Table dimensions and base dimensions are same
- » SST/03, SST/04 and SST/05 also available with lead screws for fine adjustment and positive locking.
- » Adjustable bracket provided for all models for positive clamping.



Compound Angle (CST)



Single Angle (SST)

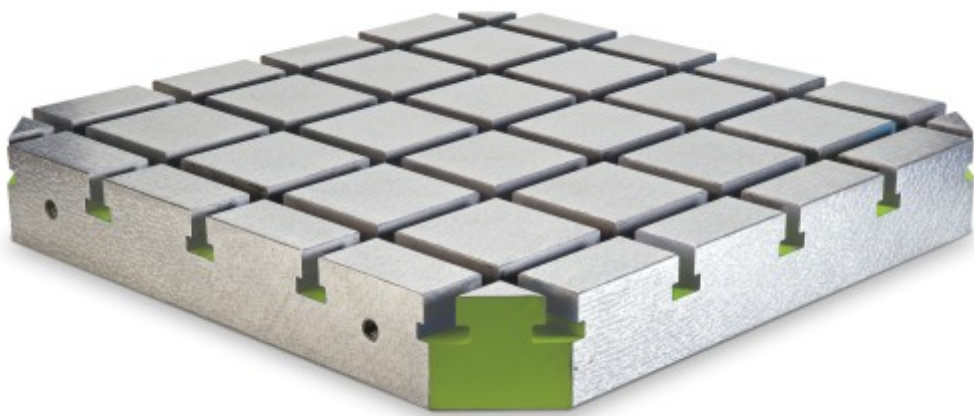
STANDARD SIZES AVAILABLE			
Model	Table dimension (mm)	Base dimension (mm)	C.D. of Rollers (mm)
SST/CST 01	150 x 100	180 x 150	100
SST/CST 02	200 x 150	230 x 200	150
SST/CST 03	250 x 150	280 x 220	200
SST/CST 04	300 x 200	330 x 250	250
SST/CST 05	400 x 250	430 x 300	300

» Finer accuracies and other sizes on request.



MICROFLAT CAST IRON CLAMPING PALLETS (SUB-TABLES) FOR CNC MACHINES

C.I Pallet Sub Tables are used on machining centres as ready fixture plates for tooling up. They allow easy, faster and repetitive set up on machine pallet and reduces change over time thereby minimizing loss of operating time. They also help in protecting the surface of machine pallet and can also be used as sub-plates to provide space for work setting.



SALIENT FEATURES:

- » Made from close grained Cast Iron Castings conforming to Grade FG-260 of IS-210 having hardness within 180-220 BHN, duly stress relieved.
- » Provided with hand-scraped finish for top, bottom and sides faces.
- » Provided with T-slots of H-8 on top working faces in both the direction and also available with tapped holes at suitable pitch.
- » Bottom face relieved.
- » Sides are hand-scraped for fixing abutment Plates.
- » Counter bored holes provided for clamping with Machine Table.
- » Flatness & parallelism within 10 microns over 300 mm.
- » Finer accuracies can also be achieved on request at extra cost.
- » Clamping Pallets as per customer's specification and drawings can also be manufactured.

Model No.	Overall size (mm)	Details of tapped holes		Details of T-slots	
		Size (mm)	Pitch (mm)	Size (mm)	Pitch (mm)
CP400/50H	400 x 400 x 50	16	80	-	-
CP500/50H	500 x 500 x 50	16	100	-	-
CP630/50H	630 x 630 x 50	16	125	-	-
CP800/50H	800 x 800 x 50	16	160	-	-
CP400/75T	400 x 400 x 75	-	-	18	80
CP500/75T	500 x 500 x 75	-	-	18	100
CP630/75T	630 x 630 x 75	-	-	18/22	125
CP800/75T	800 x 800 x 75	-	-	18/22	160

» Other sizes and larger sizes on request

MICROFLAT CAST IRON CLAMPING CUBES (TOOLING BLOCKS/TOMB STONE)

Tooling Blocks simultaneously provide multiple faces to hold components accurately in vertical plane for machining on horizontal machining centres. Upon indexing of table a new face with new components is obtained for machining resulting into significant reduction of downtime by elimination of multiple set ups. They can also be used for vertical clamping of components on Horizontal Boring Machines, Milling Machines, Horizontal Jig Mills etc.

SALIENT FEATURES:

- » Made from close grained Cast Iron Castings conforming to Grade FG-260 of IS-210 having hardness within 180-220 BHN duly stress relieved.
- » Provided with hand-scraped finish on all working faces so as to achieve flatness within 25 microns per 300 mm, squareness and parallelism within 25 microns over 300 mm.
- » Pitch tolerance between holes/T-slots within 0.3 mm
- » Vertical tennon slots in the Centre can also be provided on request at an extra cost.
- » Sides of base are provided with hand-scraped for fixing abutment Plates.
- » Counter bored holes provided to Base for clamping with Machine Table.
- » Clamping cubes as per customer's specification & drawings can also be Manufactured.



STANDARD SIZES IN DIFFERENT TYPES

Size of top Block				Size of top Block	
Base dimension in mm (L x W)	Overall height (mm)	4-face (mm)	2-face (mm)	4-face frame (mm)	2-face frame (mm)
400 x 400	450/500	275 x 275	400 x 150	250 x 250	400 x 75
500 x 500	550/600	350 x 350	500 x 200	350 x 350	500 x 75
630 x 630	600/700	450 x 450	630 x 250	450 x 450	630 x 100
800 x 800	700/800	500 x 500	800 x 300	500 x 500	800 x 100

» Other sizes and larger sizes on request

MICROFLAT SQUARE MASTER

Square Master is a user friendly and economical equipment for Measuring squareness in Laboratories, Tool Room & Workshops. It consists of a very accurate and calibrated Cast Iron Column and a saddle sliding in vertical plane with a provision to hold dial gauges in front and lateral position. Saddle is designed to move very smoothly without any stick and slip with gentle force for taking up or down on the guide-ways having balancing mechanism. The high accuracy and repeatability of the Microflat Square Master is ensured by positive contact of the saddle on the column and optimal guiding accuracy and rectangularity of Cast Iron Column with generously dimensioned base.



Technical Data of Square Master

Description	Model-300	Model-500
Travel (mm)	300	500
Squareness	3 µm	5 µm
Straightness	2 µm	3 µm
Lateral Squareness	3 µm	5 µm
Repeatability	± 1 µm	± 1 µm

» Dial Gauge/Electronic Probes quoted extra on request.



MICROFLAT SINGLE SIDED FLAT LAPPING MACHINES

MICROFLAT Lapping Machines are single Plate Machines available in various Models suitable for vast majority of Lapping applications including high stock removal, ultra hard materials, precision work to light band tolerances.



ADVANTAGES :

- » Operationally fast, with high degree of repetitive results with no extra skill.
- » Stressing of jobs eliminated as no holding force is required
- » Odd shapes and different materials all can be lapped to a fine finish of 0.6 μm CLA and flatness to one light band.
- » Variety of materials such as Cast Iron Soft/Hardened Steel, Stainless Steel, Bronze, Aluminum, Carbon, Plastics, Ceramics, Tungsten, Silicon, Stellite, Ferrite, etc. can all be lapped.

TYPICAL APPLICATIONS :

Mechanical seals, Piston Rings, Compressor Components, Pumps & Valves Components, Hydraulic Components, Gauge Blocks, Precision Spacers, Metal Cutting inserts, Bearing Races, Springs, Slitter knives, Fuel Injection Components, Ceramic, Seal & Valve components, Quartz Crystals, Precision Optics, Optical Flats, Metrological/Measuring instrument components and so on.

SALIENT FEATURES:

- » Lap Plate and conditioning Rings made from alloy Cast Iron Castings and provided with serrations on top for effective removal of sludge and proper flow abrasive to the work piece.
- » Conditioning Rings are held in position by adjustable yoke and guide rollers and rotate freely on Lap Plate to continually keep the Plate flat and true.
- » Design of main spindle bearings impart heavy axial load capacity, maximum stability, long life and smooth performance.
- » A pump feeds the slurry to the Lap Plate through a jet regulated to required amount.
- » Smooth Machined weights and felt pads are provided for all the conditioning Rings.
- » Incorporated with auto-stop through preset Digital timer.
- » Main motor is operated using variable frequency drive for jerk free start and smooth stop operations, as well as for operation at variable speed.

Description	Model-400	Model-450	Model-600	Model-750	Model-850	Model-1000
Dia. of Lap Plate (mm)	400	457	610	750	850	1000
No. of Condi. Rings (mm)	3	3	3	3	3	3
I.D. of Condi. Rings (mm)	140	175	248	315	350	406
O.D. of Condi. Rings (mm)	176	210	286	356	400	457
Height of Condi. Rings (mm)	50	55	84	84	100	102
Lap Plate speed (RPM)	48/60	48/60	48/60	48/60	48/60	48/60
Main Drive (HP)	1	2	2	3	3	5
Pump Motor (HP)	1/8, 3 phase	1/8, 3 phase	1/8, 3 phase	1/8, 3 phase	1/8, 3 phase	1/8, 3 phase
Timer (Minutes)	0-99	0-99	0-99	0-99	0-99	0-99

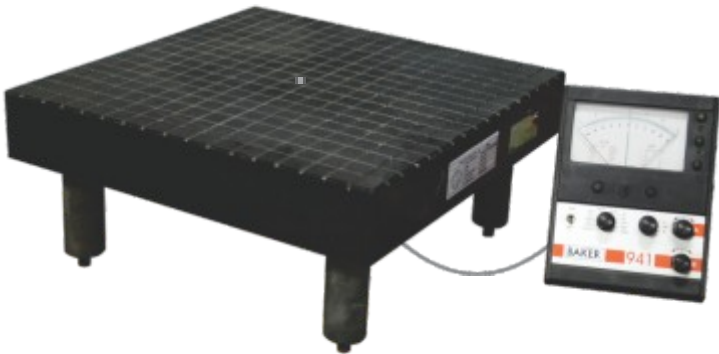
» **ALSO AVAILABLE ON REQUEST AT EXTRA COST:**

» Special purpose Flat Lapping Machines							
» Lapping Machines Pneumatic Cylinders							
» Double Sided Lapping Machine							
» CAST IRON HAND LAP PLATES, SERRATED AND UN-SERRATED							
250 x 250 mm	300 x 300 mm	400 x 400 mm	500 x 500 mm	630 x 630 mm	1000 x 1000 mm		
100 Ø	200 Ø	250 Ø	300 Ø	400 Ø	500 Ø	600 Ø	1000 Ø
» Lapping Plate Checking Gauge		500 mm	750 mm	1000 mm	1200 mm	1500 mm	
» Lapping Abrasive and Vehicle offered based on the material to be lapped.							

» **Other sizes and large sizes on request.**

MICROFLAT FLATNESS CHECKING EQUIPMENT

An ideal, convenient and accurate device to check the flatness of small Machined parts, metal stampings, lapped parts, etc. where the conventional method of checking flatness is not feasible. Very simple and precise tool for Standard Room and in process quality checks. Equipment is offered with various sizes of Grade-00 accuracy serrated Granite Plates.



Size of Plate (mm)	Flatness (µm)
300 x 300 x 50	2.6
400 x 400 x 60	2.8
500 x 500 x 80	3.0
630 x 630 x 80	3.2

» **Other sizes on request.**



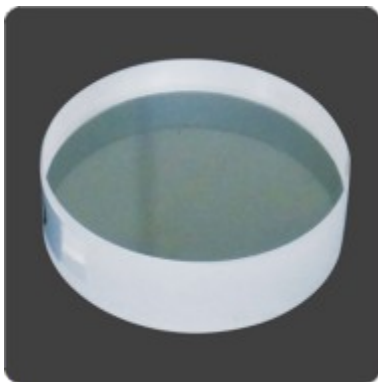
MONOCHROMATIC CHECK LIGHT

- » Monochromatic Check light is required for gauging flatness of finished parts with the help of Optical Flats.
- » Red band for high accuracy and blue band for normal accuracy requirements.
- » It is essential that surfaces which are to be measured should be made reflective.
- » Optical flat which is placed over the surface to be measured, will reflect the light emitted from the source, interference lines appear on the surface in various patterns and their deviation from the straight reference line depicts the extent of out of flatness of surface being measured.



OPTICAL FLATS

When an optical flat is placed on another surface and illuminated under monochromatic light source, the light waves reflect off both the bottom surface of the flat and the surface it is resting on. The reflected waves interfere, creating a pattern of interference fringes, visible as light and dark bands. The spacing between the fringes is smaller where the gap is changing more rapidly, indicating a departure from flatness in one of the two surfaces, in a similar way to the contour lines on a map. A flat surface is indicated by a pattern of straight, parallel fringes with equal spacing, while other patterns indicate uneven surfaces.



SALIENT FEATURES:

- » Optical flats are made from BK-7 Grade A fine annealed material
- » They are offered in two types i.e. Single sided and Double sided.
- » Standard sizes available are 30 Ø, 50 Ø, 75 Ø, 100 Ø, 125 Ø and 150 Ø
- » Accuracy offered are $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{10}$.
- » Optical flats are offered in wooden storing cases.
- » Other sizes and special sizes on request.

MICROFLAT PRECISION ENGINEERS SPIRIT LEVEL

For checking and leveling of horizontal surfaces, machine tools, machine bases and horizontal shafts.

SALIENT FEATURES:

- » Made from stress relieved Cast Iron, working faces precision hand-scraped.
- » Main vials have graduation on each side of the bubbles
- » Auxiliary vial shows lateral position and assists in horizontal setting
- » Fool proof adjustment to avoid tempering, once set.
- » Sensitivity 0.01 mm/m, 0.02 mm/m, 0.05 mm/m & 0.1 mm/m in 200 mm and 300 mm length.
- » In precision frame type spirit level, Base & one vertical face are provided with prismatic face for checking cylindrical surfaces, while other two faces are flat to check flat surfaces.
- » Sensitivity 0.01 mm/m, 0.02 mm/m, 0.05 mm/m & 0.1 mm/m in size 200 x 200 mm and 300 x 300 mm. Remaining features as horizontal Levels.
- » Magnetic Levels and Shaft Spirit Levels also offered.
- » Special sizes offered on request.
- » Provided with wooden storing case.



Precision Horizontal Spirit Level



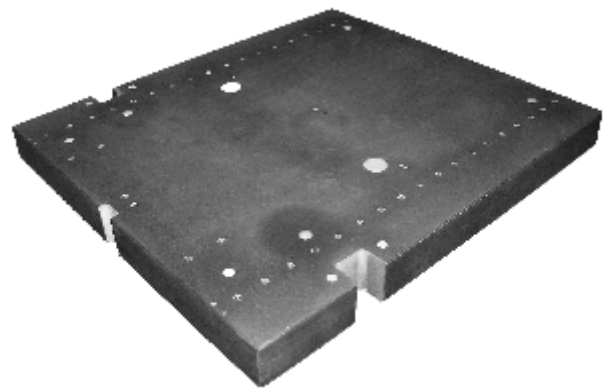
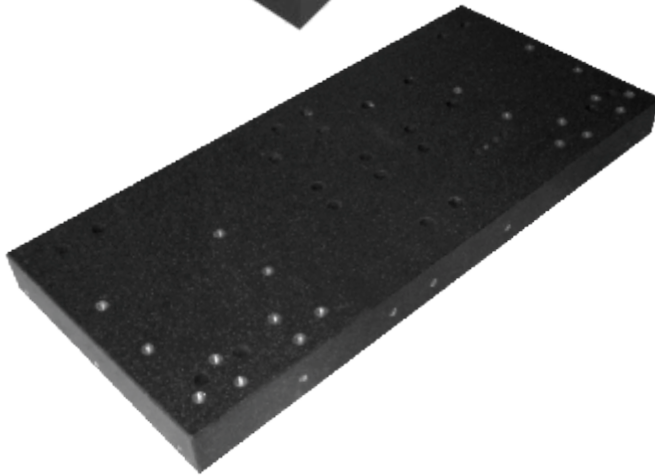
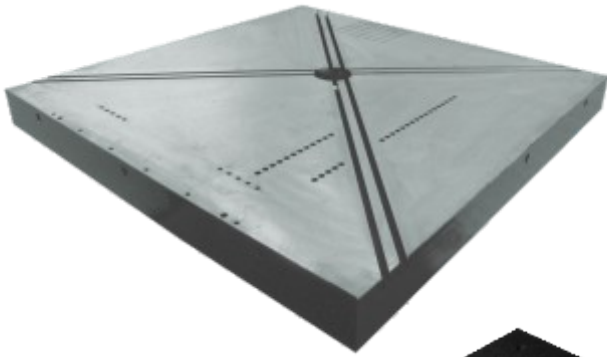
Precision Frame Type Spirit Level

POLISHING STAND

- » Hand Polishing Stands for high gloss finish of components after lapping
if you have any application for lapping, send us details such as :
Area of Industrial application, part name, material, hardness, composition, previous operation, tolerance and finish
before and after lapping, production rate, present process, etc.

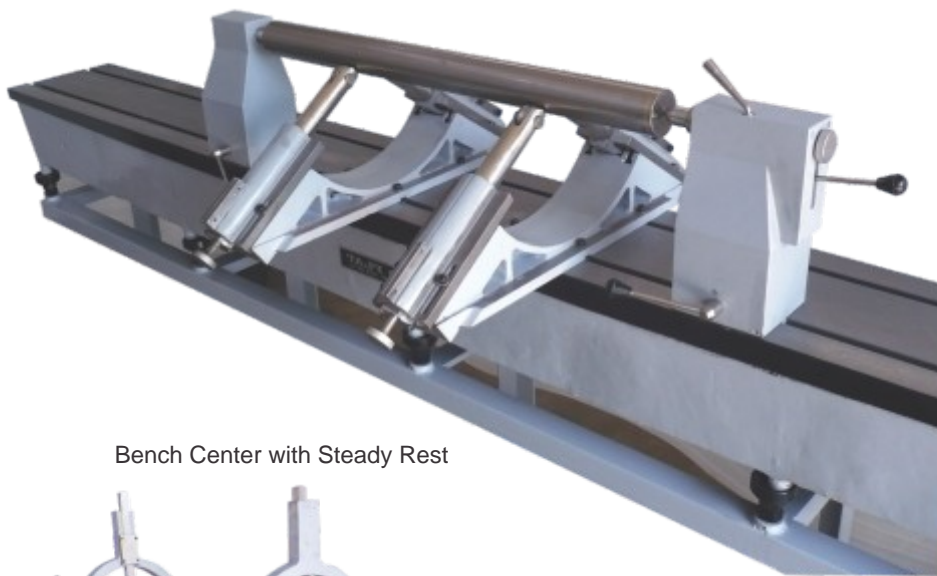
MICROFLAT ALSO UNDERTAKES

Design, development and manufacture of special purpose job holding fixtures, inspection fixtures and other custom built equipment and fixtures as per customers drawings & specifications. Some of our previous custom built products are shown below.

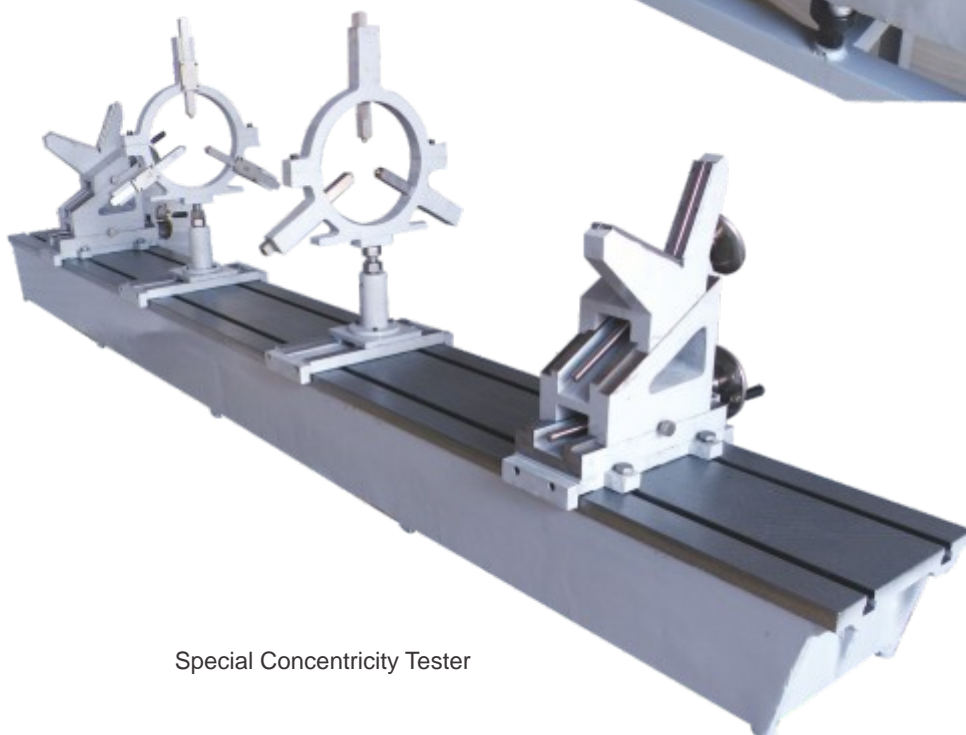




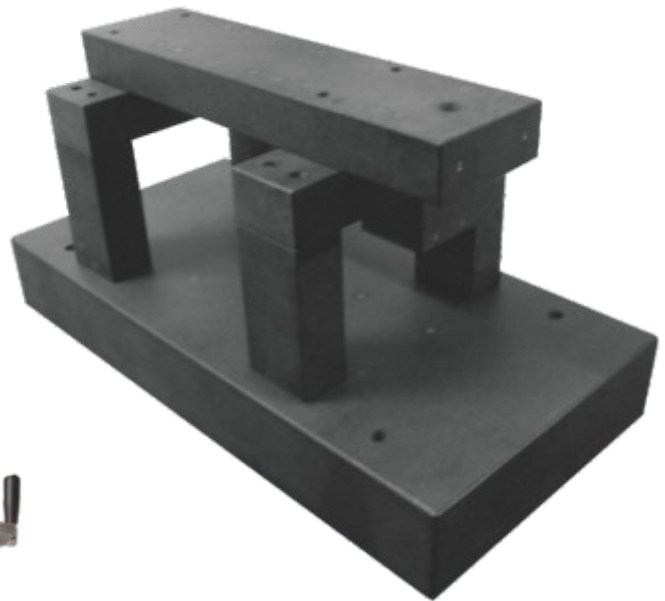
Taper Angle checking fixture

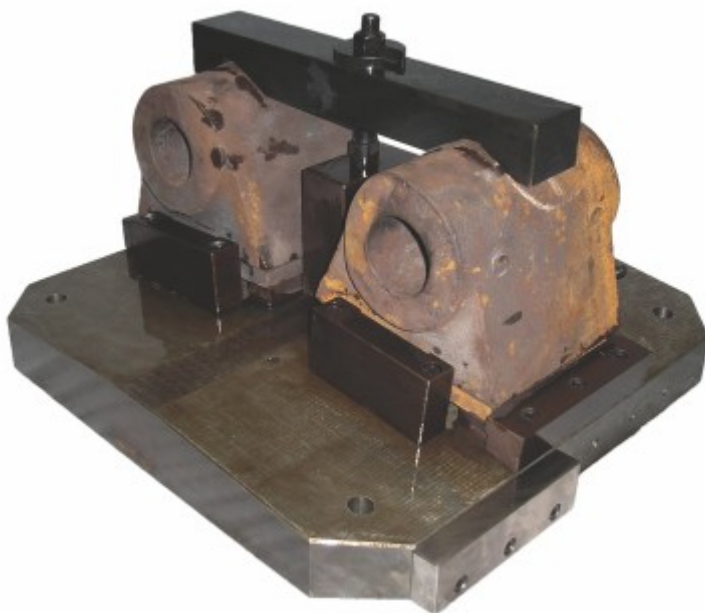
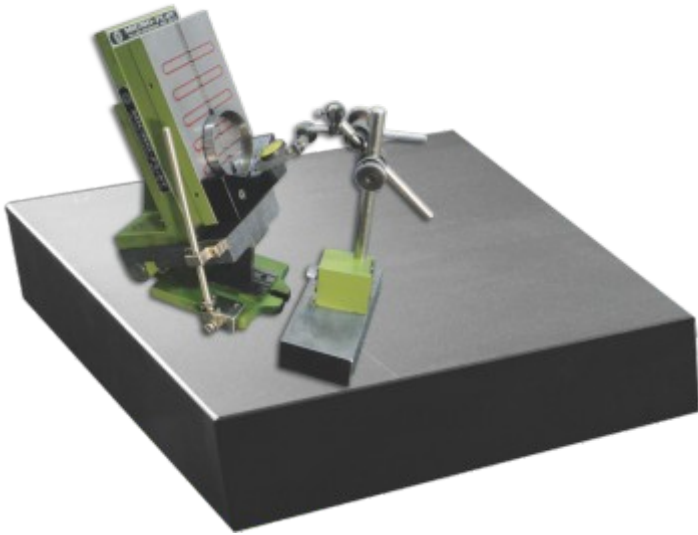


Bench Center with Steady Rest



Special Concentricity Tester





Few of our esteemed customers





MICRO-FLAT

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• Due to constant developments, specifications & designs are subject to change.